1. Introduction

The National Institute of Standards and Technology initiated a competence program in the year 1995 to develop techniques for calibration of high heat-flux sensors. An outcome of the competence program is the capability to calibrate heat-flux sensors with traceability to the High Accuracy Cryogenic Radiometer. The current range of calibration, performed with a 25 mm Variable-Temperature Blackbody (VTBB), is up to 50 kW/m^2. The calibration technique [1] uses an electrical substitution radiometer (ESR) as the transfer standard.

The calibration is now available to the user community through the NIST Calibration Services. Several sensors calibrated so far show good repeatability of the technique with an expanded uncertainty of 2 %, corresponding to a coverage factor of $k = 2$ or 95 % confidence level. This report gives a description of the equipment used in the calibration, laboratory procedure currently in practice, and an evaluation of the uncertainties in the measurement process.